COLLECTING STACK PARTICULATE FILTER AND CHARCOAL CARTRIDGE SAMPLES

Purpose

This Meteorology and Air Quality Group (MAQ) procedure describes the process to collect particulate filters and charcoal cartridge samples, deliver the samples to the analysis laboratory, and maintain proper sample chain-of-custody.

Scope

This procedure applies to the collection of particulate filter and charcoal cartridge samples from sampled stacks at Los Alamos National Laboratory (LANL) as part of the Rad-NESHAP Project. The collection of filters from sampled stacks at the Los Alamos Neutron Science Center is not covered by this procedure.

In this Procedure

Hazard Control Plan

The hazard evaluation associated with this work is documented in Attachment 1: Initial risk = **low**. Residual risk = **low**. Work permits required: none. First authorization review date is one year from group leader signature below; subsequent authorizations are on file in the group office.
NOTE: This work authorization applies only to MAQ personnel. Supervisors of personnel in other groups are responsible for authorizing work for their employees.

Signatures
(continued on next page)

Prepared by:	Date:
Debra Archuleta, MAQ	5/31/02
Work authorized by:	Date:
Jean Dewart, MAQ Acting Group Leader	6/3/02

General information about this procedure

Signatures, *continued*

Approved by:	Date:
Dave Fuehne, RAD-NESHAP Project Leader	5/31/02
Approved by:	Date:
Terry Morgan, Quality Assurance Officer	6/3/02

Attachments

This procedure has the following attachments:

Number	Attachment Title	No. of pages
1	Hazard Control Plan	2
2	Stack Sample Data Form and Chain-of-Custody Record	1
3	Stack Sample Data Form and Chain-of-Custody Record for Unscheduled Sample Collection	1
4	HPAL Submittal Form	1
5	Filter Clumping Strategy	2

History of revision

Revision	Date	Description Of Changes
0	03/29/96	New document.
1	12/16/96	Revised to include inspection of sampler "O" ring, changes in group management, and worker safety.
2	02/06/98	Revised to include blank filters and wording changes.
3	02/19/98	Revisions to include CMR procedural requirements.
4	6/2/00	Added HCP as attachment 1, removed list of stacks, and made wording changes throughout.
5	3/13/2001	Changed sequence of steps in filter and charcoal collection, modified "Stack Sample Data Form" to include System Inspection Checklist.
6	8/2/01	Revised purpose wording to include chain of custody, added reference to form, added steps on receiving custody of samples back from HPAL.
7	3/29/02	Added steps on donning and removing gloves during survey for activity, added step to sign for custody when receiving samples from HPAL at TA–55, added documentation of compliance with DOT regulations, and added attachment 5 on "clumping" of samples for gamma spectroscopy analysis.
8	6/4/02	Update details of several steps and modify step on surveying filters with radiation survey instrument.

General information, continued

Who requires training to this procedure?

The following personnel require training before implementing this procedure:

- MAQ technicians, MAQ staff members, and HSR-1 Radiation Control Technicians (RCTs) assigned to perform all or part of this procedure
- HSR-1 RCTs who may need to perform unscheduled sample collections

Training method

The training method for this procedure is **on-the-job** training by a previously trained employee and is documented in accordance with the procedure for training (MAQ-024).

Prerequisites

In addition to training to this procedure, the following training is also required before performing this procedure:

- Radiological Worker training
- Facility-specific requirements for each facility

A "Q" level security clearance is also required for some facilities.

Definitions specific to this procedure

HPAL: The Health Physics Analysis Laboratory (HPAL) is a section in HSR-4 that performs gross alpha/beta and gamma spectroscopy analysis of radioactive samples.

PPE: Personnel Protective Equipment is equipment used to protect the individual from becoming contaminated from hazardous or radioactive material during an operation.

Fibrous side of filter: The glass-fiber particulate filters used for stack sampling have a very smooth side and a coarse side having visible glass fibers. The coarse side is considered the "fibrous" side.

References

The following documents are referenced in this procedure:

- MAQ-024, "Personnel Training"
- MAQ-026, "Deficiency Reporting and Correcting"
- MAQ-124, "Compositing Stack Sample Filters"
- 49 CFR 173, Subpart I, Department of Transportation regulations for transport of "Class 7 (Radioactive) Materials"
- MAQ-SOW-07, "Statement of Work for Gamma Spectroscopy of Stack Charcoal and Particulate Filter Samples"

Background and overview of stack filter change

Background

The Environmental Protection Agency's National Emission Standard for Emissions of Radionuclides Other Than Radon From Department of Energy Facilities, 40 CFR 61, Subpart H (NESHAP) and facility-specific requirements (e.g., TSRs and OSRs) require sampling for various radionuclides from several LANL facilities. Included in these requirements is the need to sample stack emissions for particulate and vapor radioactive materials. Most facilities at LANL that work with radioactive materials have the potential to emit particulate material emissions. As such, particulate sampling is the most common stack sampling conducted at LANL. Glass fiber filters are used for this sampling.

A small number of facilities at LANL also have the potential to emit vapor emissions. These emissions are not readily collected on filter paper so a charcoal-sampling cartridge is used in series with the filter paper to collect these radionuclides, where applicable.

Overview of filter change

This procedure describes the four processes required to perform the sample change:

- preparing forms, sample filters, and charcoal cartridges
- removing and replacing sample filters and charcoal cartridges
- delivering the samples to HPAL for analysis
- completing the required documentation

Frequency of filter change

A stack-sampling period is normally a one-week, 7-day period. The start and end times of the period are determined by the actual time of sample filter and/or charcoal cartridge change. A trained MAQ technician or staff member changes the filters, normally each week. Extra change cycles may be necessary as part of maintenance or test activities.

After an extended holiday, samples may be changed on the morning of the next working day, if the facility and the Rad-NESHAP Project Leader agree. Other sample change schedules may be arranged for extended holiday periods to meet facility needs.

Worker safety

Performing work safely

DO NOT perform work under conditions you consider unsafe. Before beginning work described in this procedure, review safety needs and requirements, identify hazards, and develop hazard mitigation measures. Be aware that facility configurations and hazards may change between visits. Hazards to assess include, but are not limited to the following:

Rotating machinery and electrical equipment - Work described in this procedure is performed in the vicinity of fans, motors, and other facility equipment. Do not work in the vicinity of exposed conductors or if guards are not in place on operating facility equipment.

Radiological hazards - Stack sampling locations are often radiologically controlled. Be sure to comply with all facility-specific PPE requirements before entering controlled areas.

Roofs and scaffolding - Work described in this procedure will take place on roofs and/or scaffolding. **Fall protection equipment must be used if the performance of work requires personnel to be within 6 feet of the edge of a 6-foot or greater drop.** Additional safety precautions and equipment must be considered, and when appropriate, used to minimize the risks of injury resulting from falling equipment, lightning strikes, exposure, and other potential hazards. Safety precautions to be considered related to working at heights include:

- Use of hard-hats
- Observing safe ladder practices
- Delaying work because of dangerous weather conditions

DO NOT work on roofs and/or outdoor scaffolding during lightning storms or when lightning storms are in the area.

Facility management units - Work control is the responsibility of the Facility Manager. Obtain approval from facility management before beginning work described in this procedure**.** Ensure you have completed all facility-specific training requirements (see prerequisite training requirements on page 2).

Trans-portation requirements

Transport of Class 7 (Radioactive) materials is regulated according to 49CFR173, Subpart I. According to this regulation, material with a specific activity of less than 2 nanocuries per gram are NOT considered radioactive material for transportation or shipping purposes, and special handling is not necessary.

Note that if the samples fall within the activity threshold criteria specified in the chapter *Particulate Filter and Charcoal Cartridge Collection*, step #20, then historical data shows that they will also be within the DOT limits.

Particulate filter and charcoal cartridge preparation

Overview

Before sample filters and charcoal cartridges may be changed, filter, cartridges, and required documentation must be prepared. The materials listed below must be collected and used during the preparation process.

Required materials

Collect the following materials:

- Hollingsworth and Vose Company LB-5211-A0 (or equivalent) glass-fiber filter media filters
- Hi-Q Environmental Products Company catalog number TC-12 (or equivalent) analytical carbon cartridges
- glassine envelopes
- small ziploc bags
- large ziploc bags
- Stack Sample Data Form and Chain-of-Custody Records (Attachment 2)
- HPAL Submittal Forms (Attachment 4)
- Clipboard
- plastic sample box for transporting required materials in the field

Steps to prepare filters and cartridges

Prepare the glass-fiber filters and charcoal cartridges, in accordance with the following steps:

Step	Action
1	Prepare a Stack Sample Data Form and Chain-of-Custody Record (Attachment 2) and an HPAL Submittal Form (Attachment 4) for each filter clump (see Attachment 5) by placing a bar code sticker on each form and recording the sampling facility identification (TA, Bldg., ES).
2	Prepare a Stack-Sample Data Form and Chain-of-Custody Record (Attachment 2) and an HPAL Submittal Form (Attachment 4) for blank filters by placing a bar code sticker on each form and recording "TA-54, Bldg. 1001.
3	Label the back (fibrous side) of the new glass-fiber filter for each sampled stack with the location (TA, Bldg., ES) and the sampling (xx/xx – xx/oo) period dates.
4	Label one (1) trip blank "T-B-1" and record the dates of the sampling-period on the filters.
5	Label a single filter as a matrix blank filter, "M-B-3," and record the dates of the sampling period on the filter. Label a group of seven filters as a matrix blank for the clumps, "M-B-5," and record the sample dates on the clump.

Steps continued on next page.

Particulate filter and charcoal cartridge preparation, cont.

Step	Action
6	Collect two (2) blank filters, for HPAL to use as spike QC's.
7	Label the side of a new charcoal cartridge for each applicable stack with the location (TA, Bldg., ES) and the sampling-period dates.
8	Place each filter in a clean glassine envelope and place all glassine envelopes **for that clump** in a new ziploc bag.
9	Place each charcoal cartridge in a new ziploc bag.
10	Place ziploc bags containing glassine envelopes and ziploc bags containing charcoal cartridges prepared in steps 8 and 9 into a larger ziploc bag.
11	Secure the Stack Sample Data Form and Chain-of-Custody-Record and HPAL Submittal Forms to the clipboard.
12	Place the bag containing the filters, charcoal cartridges, and the clipboard holding the forms into the plastic sample box.

Particulate filter and charcoal cartridge collection

Overview

A trained **MAQ technician**, **MAQ staff member**, or **HSR-1 RCT** normally changes the filters and charcoal cartridges on a weekly (7 day interval) basis. However, different cycles may be necessary as part of maintenance or test activities. Before collecting samples, collect the equipment listed below.

Equipment and materials required for collecting samples

A plastic sample box, containing the following materials will be used in the field for collecting filters and cartridges:

- prepared glass-fiber filters
- prepared charcoal cartridges
- Stack Sample Data Form and Chain of Custody Records prepared for filters and charcoal cartridges to be installed
- Stack Sample Data Form and Chain of Custody Records for filters and charcoal cartridges to be collected (installed previous week)
- prepared HPAL Submittal Forms
- list of sampling system air flow acceptable ranges
- small ziploc bags
- large ziploc bags
- pylox gloves
- tweezers
- three spare Parker part number 142 (or equivalent), 2.362 in. inside diameter "O" rings (for filter holders)
- three spare Hi-Q Environmental Products Company part number 9455-K21 (or equivalent) gaskets and part number 9452K96 (or equivalent) "O" rings (for charcoal cartridge holders)

Carry a portable gross alpha/gross beta survey instrument in the government vehicle when collecting samples. When collecting samples from the CMR building (except Wing 9), hand carry the portable gross alpha/gross beta survey instrument in the building.

Steps to exchange filters

To change a glass-fiber filter and/or charcoal cartridge, perform the following steps:

Step	Action
1	When entering a facility, address all facility-specific sign-in, dosimetery and notification requirements. **NOTE:** Before continuing with sample collection activities, see the chapter *Worker safety* and review safety needs and requirements. **DO NOT perform work under conditions you consider unsafe**.

Steps continued on next page.

Particulate filter and charcoal cartridge collection, cont.

Step	Action
2	Put on a pair of Pylox gloves when handling stack samples at any point during collection and survey. **Pylox gloves** are the minimum required **PPE** for performing sample filter and charcoal cartridge changes. **Facilities may have additional PPE requirements for facility access**.
3	Verify operation of the sampling system. Is the sample line connected? Verify that the sample flow is within the allowable range for the system by checking the rotometer reading against the range provided by the Rad-NESHAP Project Leader. If the sample system air flow or condition is unsatisfactory, record a description of the problem in the "Remarks" column and notify the building or facility manager. If the system is in the CMR building, notify the CMR Operations Center.
4	Document the routine inspection of the sampling system. To indicate normal operation or conditions, check (√) each appropriate box in the "Sample System Inspection" section of the Stack Sample Data Form and Chain-of-Custody Record. Indicate abnormal operations or conditions in the "Remarks" column. ~~Also, note the sample flow (in lpm units) before changeout.~~ Record the timer reading.
5	If a charcoal cartridge is to be changed, open the cartridge holder. If there is no charcoal cartridge on the system, proceed to Step 11.
6	Remove the charcoal cartridge and place it in a new ziploc bag.
7	Insert this ziploc bag, containing the cartridge, into a larger ziploc bag.
8	Examine the charcoal cartridge holder for the presence of, and condition of, the flat gasket and "O" ring and replace the gasket and/or "O" ring if it is missing, damaged, or deteriorated.
9	Place the new charcoal cartridge in the holder ensuring that the cartridge is aligned according to the flow direction arrow on the side of the cartridge.
10	Reconnect the charcoal cartridge holder and hand-tighten the assembly.
11	Open the stack filter holder.
12	Remove glass fiber filter and insert into glassine envelope/ziploc bag.
13	Place the new glass-fiber filter in the filter holder with the fibrous, labeled side toward the vacuum source. **NOTE**: This arrangement should be used although standard practice is to place the fibrous side toward the flow stream. LANL has developed depth-of-burial factors for these filters with the fibrous side toward the vacuum source that warrants this arrangement.
14	Reassemble the sample filter holder and hand-tighten.

Steps continued on next page.

Particulate filter and charcoal cartridge collection, cont.

Step	Action
15	Record the stop date/time and the *sample period* start date/time on the Stack Sample Data Form and Chain-of-Custody Record (Attachment 2) for the removed filter and charcoal cartridge and the new filter and charcoal cartridge. **NOTE**: this step may be performed after returning to vehicle, if desired.
16	Upon completion of filter and cartridge replacement, verify operation of the sampling system. Verify that the sample flow is within the allowable range for the system by checking the rotometer reading against the range provided by the Rad-NESHAP Project Leader. If the sample system air flow or condition is unsatisfactory, record a description of the problem in the "Remarks" column and notify the facility manager. If the system is in the CMR building, notify the CMR Operations Center.
17	Secure the completed Stack Sample Data Form and Chain-of-Custody Record and the HPAL Submittal Form to the clipboard and place the clipboard in the plastic sample box.
18	Go to the next sampling site at this facility and repeat steps 1 -- 17.
19	When exiting a facility after collecting samples and installing new filters/cartridges, address all facility-specific sign-out and notification requirements.
20	Keep the vehicle locked, even behind security fence areas, when filters are stored inside.
21~~0~~	When returning to the government vehicle after collecting the filters from CMR Wing 9 or any facility other than CMR Wings 2, 3, 4, 5, or 7, survey the outside of each stack sample ~~contained in a ziploc bag~~ with the portable gross-survey instrument. After collecting filters from CMR Wings 2, 3, 4, 5, or 7 and before leaving the wing where the filters were collected, survey the outside of each filter using either the portable gross-survey instrument or a survey instrument inside the facility. • If the gross *alpha* count is **greater than** 5,000 counts per minute, or if the gross *beta* count is **greater than** 50,000 counts per minute, place the stack sample in a separate ziploc bag to prevent cross contaminating the other stack samples. Call HPAL at TA-55 to inform them of the high gross alpha count before delivering the filter. • If the gross *alpha* count is 5,000 counts per minute **or less** and the gross *beta* count is 50,000 counts per minute **or less**, isolating stack sample is not necessary to continue with sample collection.

Steps continued on next page.

Particulate filter and charcoal cartridge collection, cont.

Step	Action
22	After collecting the filters from all sampling systems at the CMR Building, leave a copy of the Stack Sample Data Form and Chain-of-Custody Record containing the current reading of sampling system airflow acceptable ranges with the CMR Operations Center before leaving the facility.
23	Follow the instructions in the next two chapters of this procedure to deliver the samples to HPAL for analysis.
24	Secure the completed Stack Sample Data Form and Chain-of-Custody Record and the HPAL Submittal Form to the clipboard and place in the plastic sample box.

Delivering particulate filter samples to HPAL at TA-55

Overview

Deliver the collected particulate glass-fiber filter samples to HPAL at TA-55 for analysis. HPAL requires a completed HPAL Submittal Form (Attachment 4) for each set of particulate filters.

Delivery to HPAL

When delivering the samples for analysis, perform the following steps at the HPAL TA-55 laboratory in building PF-2, room 124B:

Step	Action
1	Prior to submittal, ensure all filters are present and grouped properly (see Attachment 5 or a revised clumping strategy, if applicable).
2	Put on a lab coat.
3	Print name, sign, and record the date and time on the HPAL Submittal Forms and the Stack Sample Data Form and Chain-of-Custody Records (Attachment 2, or Attachment 3 if unscheduled collection was performed) to transfer custody of the samples to HPAL. Keep the Stack-Sample Data Form and Chain-of-Custody Records for MAQ's records.
4	Log the sample information into the HPAL database as prompted by the computer.
5	Transfer the samples and the HPAL Submittal Forms to HPAL personnel.
6	Retain the yellow copy of the HPAL Submittal Forms, which must be signed by an HPAL employee, for MAQ's records.

Receive previously-analyzed filters

While at the HPAL laboratory at TA-55, perform the following steps to take back custody of the previously analyzed set of filters.

Step	Action
1	At the time of delivery of the new filters (steps above), take back custody of the previously analyzed samples.
2	Verify against the HPAL submittal form that all the filters are present.
3	Separate the filters by stack into the indexed sample storage box kept in TA-54, Building 1001.
4	Sign and date the white HPAL submittal form to document receipt. Keep the form with the samples.
5	Log in the samples in the MAQ logbook at TA-54-1001
6	Store the samples in the locked cabinet at TA-54-1001 until they are composited according to MAQ-124.

Delivering charcoal cartridge samples to HPAL at TA-3

Overview

Deliver the collected charcoal cartridge samples to HPAL at TA-3, building 2010, room 147 for analysis. HPAL requires an HPAL Submittal Form for each charcoal cartridge.

At the time of delivery, take back custody of the previously analyzed samples.

Delivery to HPAL

Perform the following steps when delivering the samples for analysis, to HPAL TA-3 laboratory, building 2010, room 147:

Step	Action
1	Print name, sign, and record the date and time on the HPAL Submittal Forms and the Stack Sample Data Form and Chain-of-Custody Records to transfer custody of the sample charcoal cartridges to HPAL. Keep the Stack Sample Data Form and Chain-of-Custody Records for MAQ's records.
2	Log the sample information into the HPAL database as prompted by the computer.
3	Transfer the samples and the HPAL Submittal Forms to HPAL personnel.
4	Retain the yellow copy of the HPAL Submittal Forms, which must be signed by an HPAL employee, for MAQ's records.
5	Receive the previously analyzed charcoal canisters from HPAL and sign the "received by" section on the c-of-c form.
6	Transport the previously analyzed charcoal canisters to TA-54-1001 and store them in the locked cabinet for 3 months. After 3 months, dispose of the canisters in the rad trash and record the disposal in the logbook.

Unscheduled stack sample collection by an HSR-1 RCT

Overview

Unusual circumstances at a facility may require an HSR-1 Radiation Control Technician (RCT) to immediately collect the stack particulate filters and/or charcoal cartridges. Performing the standard collection and documentation process described previously in this procedure may not be possible. These situations must be accommodated, but minimized. Extreme care must be taken to ensure the validity of the samples for demonstrating regulatory compliance.

Unscheduled collection by an RCT

For an unscheduled sample collection, perform the following steps:

Step	Action
1	Prepare the new particulate filters and charcoal cartridges by following the steps specified in the *Particulate filter and charcoal cartridge preparation* chapter of this procedure. Record the sample on the Stack-Sample Data Form and Chain-of-Custody Record for Unscheduled Sample Collection (Attachment 3). An HPAL bar code tracking sticker is not required on this form.
2	Change the samples by following the steps specified in the *Particulate filter collection and charcoal cartridges collection* chapter of this procedure (except use Attachment 3 in place of Attachment 2). Record all data on the Stack-Sample Data Form and Chain-of-Custody Record for Unscheduled Sample Collection (Attachment 3). Record the date and time the filter was removed, the date and time the new filter was installed, and the timer reading. Complete the Sample System Inspection checklist.
3	Record the reason for the unscheduled sample collection on the Particulate Stack Sample Data Form and Chain of Custody Record for Unscheduled Sample Collection (Attachment 3). **Immediately** notify MAQ of the unscheduled sample collection by calling 5-8855. During off-hours, leave a message on voice mail. FAX the completed Stack Sample Data Form and Chain-of-Custody Record for unscheduled sample collection to MAQ at 5-8858.

Records resulting from this procedure

Records

The following records generated as a result of this procedure are to be submitted to the records coordinator **within two months** of generation:

- Stack-Sample Data Form and Chain-of-Custody Record (Attachment 2)
- Stack-Sample Data Form and Chain-of-Custody Record for Unscheduled Sample Collection (Attachment 3), when used
- HPAL Submittal Form (Attachment 4)

HAZARD CONTROL PLAN

1. The work to be performed is described in this procedure.
"Collecting Stack Particulate Filter And Charcoal Cartridge Samples"

2. Describe potential hazards associated with the work (use continuation page if needed).

A: Radiological control areas: Personnel must enter radiological areas weekly, where contamination is possible.
B: Ladders: At some facility there are ladders approximately 6' to 20' tall. Steps and stairs at other facilities.
C: Roofs: Fall hazards exist while walking on roofs to get near stack where sample is collected.
D: Rotating Machinery: Where samples are collected there is a fan you are close to while removing sample.
E: Weather Conditions: Most samples are outdoors. Conditions such as heavy rains, lightning, snow and ice will make it dangerous to remove samples.
F: Contamination: Filters may contain radioactive particulate matter, and careless handling can result in personnel contamination or cross-contamination between filters.

3. For each hazard, list the likelihood and severity, and the resulting initial risk level (before any work controls are applied, as determined according to LIR300-00-01.0, section 7.2)

A: Radiological control areas: Improbable / moderate = Minimal
B: Ladders: Remote / Catastrophic = Low
C: Roofs: Remote / Catastrophic = Low
D: Rotating Machinery: Remote / Critical = Minimal
E: Weather Conditions: Occasional / Negligible = Minimal
F: Contamination: Occasional / Moderate = Low

Overall *initial* risk: ☐ Minimal ☒ Low ☐ Medium ☐ High

4. Applicable Laboratory, facility, or activity operational requirements directly related to the work:
☒ None ☐ List: Work Permits required? ☒ No ☐ List:

HAZARD CONTROL PLAN, continued

5. Describe how the hazards listed above will be mitigated (e.g., safety equipment, administrative controls, etc.):

A: Radiological control areas: Access controlled by facility, sign-ins, monitor stations, PPE, RCT support.

B: Ladders: Access controlled by sign-in, review of Regulation fall protection 29CFR1926.500 subpart M. Appropriate hand railings, safety chains and gates.

C: Roofs: Access controlled by sign-in, review of regulation fall protection 29CFR1926.500 subpart M. Stay at least 6' from edge if no railings exist. Barriers are required in places where stack samplers are located less than 6' from edge.

D: Rotating Machinery: Fan motor belts have shields in place as a barrier, personnel/personal safety awareness of area.

E: Weather Conditions: Knowledge of weather on day of sample change. In poor conditions, work will be cancelled until conditions improve.

F: Contamination: use personal protective equipment (e.g., gloves, labcoats) as described in this procedure and according to facility requirements.

6. Knowledge, skills, abilities, and training necessary to safely perform this work (check one or both):

☒ Group-level orientation (per MAQ-032) and training to this procedure.

☒ Other → See training prerequisites on procedure page 3. Any additional describe here:

7. Any wastes and/or residual materials? (check one) ☒ None ☐ List:

8. Considering the administrative and engineering controls to be used, the *residual* risk level (as determined according to LIR300-00-01.0, section 7.3.3) is (check one):

☐ Minimal ☒ Low ☐ Medium (requires approval by Division Director)

9. Emergency actions to take in event of control failures or abnormal operation (check one):

☐ None ☒ List:

Decontaminate as instructed by ESH-1 RCT.

Perform first aid as necessary and report to ESH-2 or hospital.

Signature of preparer of this HCP: This HCP was prepared by a knowledgeable individual and reviewed in accordance with requirements in LIR 300-00-01 and LIR 300-00-02.

Preparer(s) signature(s)	Name(s) (print) /Position	Date

Signature by group leader on procedure title page signifies authorization to perform work for personnel properly trained to this procedure. This authorization will be renewed annually and documented in MAQ records. Controlled copies are considered authorized. Work will be performed to controlled copies only. This plan and procedure will be revised according to MAQ-022 and distributed according to MAQ-030.

MAQ, Air Quality

Stack Sample Data Form and Chain-of-Custody Record

This form is from MAQ-109

Facility Name:

Analysis Requested: Gross Alpha, Gross Beta, Gamma Spectroscopy

Sample System Inspection

(Place a check (√) in box to indicate normal operation/conditions. Record sample flow in lpm/units)

Place Barcode Tracking Sticker Here

Sample Identification TA – Bldg – ES	Date Start	Time Start	Date Stop	Time Stop	Matrix	Container Type	Stack Fan	Sample Flow	Filter House	Sample Line	Stack Con'd	Timer reading	Remarks
					Filter	Glassine Envelope							
					Filter	Glassine Envelope							
					Filter	Glassine Envelope							
					Filter	Glassine Envelope							
					Filter	Glassine Envelope							
					Filter	Glassine Envelope							
					Filter	Glassine Envelope							
					Filter	Glassine Envelope							
					Filter	Glassine Envelope							
					Filter	Glassine Envelope							
					Filter	Glassine Envelope							
					Filter	Glassine Envelope							
					Filter	Glassine Envelope							

Sample Collector (print and sign) _____

Comments:

Relinquished by (print and sign)	Date Time	Relinquished by (print and sign)	Date Time	Relinquished by (print and sign)	Date Time	Relinquished by (print and sign)	Date Time
Received by (print and sign)		Received by (print and sign)		Received by (print and sign)		Received by (print and sign)	

UNSCHEDULED SAMPLE COLLECTION | MAQ, Air Quality | UNSCHEDULED SAMPLE COLLECTION

Stack Sample Data Form and Chain-of-Custody Record

This form is from MAQ-109

Facility Name:

Analysis Requested: Gross Alpha, Gross Beta, Gamma Spectroscopy

Sample System Inspection

(Place a check (√) in box to indicate normal operation/conditions. Record sample flow in lpm/units)

Place Barcode Tracking Sticker Here

Sample Identification TA – Bldg – ES	Date Start	Time Start	Date Stop	Time Stop	Matrix	Container Type	Stack Fan	Sample Flow	Filter House	Sample Line	Stack Con'd	Timer reading	Remarks
					Filter	Glassine Envelope							
					Filter	Glassine Envelope							
					Filter	Glassine Envelope							
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					Filter	Glassine Envelope							
					Filter	Glassine Envelope							

Sample Collector (print and sign) _____

Comments:

Relinquished by (print and sign)	Date Time	Relinquished by (print and sign)	Date Time	Relinquished by (print and sign)	Date Time	Relinquished by (print and sign)	Date Time
Received by (print and sign)		Received by (print and sign)		Received by (print and sign)		Received by (print and sign)	

HPAL SUBMITTAL FORM

SAMPLE DESCRIPTION

Sample Date/Time: _____ No. Of Samples: _____

TA: _____ Bldg: _____

RCT: _____ Z Number: _____

RCT Signature: _____ MS: _____

Phone/Fax: _____

TYPE OF SAMPLE SUBMITTED

☐ Smear ☐ LAS ☐ Oils ☐ Liquid ☐ Soil ☐ Solid

☐ CAM ☐ Air Sample ☐ Nasal Swipe ☐ Wound

☐ Stack

☐ Special/Type: _____

ANALYSIS REQUESTED

☐ Gross (check the appropriate box) ☐ Alpha ☐ Beta ☐ Gamma

☐ Gamma Spec ☐ Alpha Spec ☐ Liquid Scint

☐ Nuclide: _____

SAMPLE TRACKING NUMBER

SAMPLE PRIORITY STATUS

REMARKS

Relinquished by	Date	Time	Received by	Date	Time
Printed Name					
Signature					

Printed Name					
Signature					
Z Number					
Printed Name					
Signature					
Z Number					

FILTER CLUMPING STRATEGY

In recent history, only a few sample filters have ever had any detectable gamma-emitting radionuclides. However, it is desired to continue gamma spectroscopy on these samples, to ensure that the stacks are monitored for all potentially significant radionuclides.

To keep this level of security but reduce the cost, time, and effort of gamma spectroscopy analyses, the following strategy is adopted for the stack sample filters, similar to that used in the AIRNET samples. A complete description of the statement of work appears in MAQ-SOW-07.

Stacks with low potential for gamma activity will be "clumped" together, in groups of seven filters. Gamma spectroscopy will be conducted on the entire clump, and if the analysis reveals that there is no activity beyond the minimal detected activity, no further action will be taken. Activity of "< MDA" will be reported for each of the nuclides, for each filter in the clump. Activity above the MDA will result in the clump being separated and each counted individually. If one filter is expected to be "hot" (as determined through gross alpha/beta screening), and its gamma spectroscopy analysis reveals that it accounts for all of the initially detected activity in the clump, analysis on the subsequent filters is unnecessary.

Gross alpha and gross beta analysis will be still be conducted on each filter individually. Charcoal filters will still be analyzed individually, as will paper filters from facilities with higher potential for gamma activity.

When submitting samples to HPAL, the samples will be submitted in groups associated by clumps. A single chain-of-custody form will be used for each group as described below.

At the beginning of CY 2002, the following breakdown was used for clumping paper filters. Note that MAQ Rad-NESHAP staff can change the clump groupings if warranted by operational needs.

TA-3 Bldg-29 (Chemical & Metallurgical Research facility), "A" Clump (0300029AC)
These filters have a greater potential for activity than other CMR samples.

TA-03-BLDG-29-ES-23	(Wing 4)
TA-03-BLDG-29-ES-24	(Wing 4)
TA-03-BLDG-29-ES-28	(Wing 5)
TA-03-BLDG-29-ES-29	(Wing 5)
TA-03-BLDG-29-ES-44	(Wing 9, Hot Cells)
TA-03-BLDG-29-ES-45	(Wing 9, Hot Cells)
TA-03-BLDG-29-ES-46	(Wing 9, Hot Cells)

Continued on next page

FILTER CLUMPING STRATEGY, CONTINUED

TA-3 Bldg-29 (Chemical & Metallurgical Research facility), "B" Clump (0300029BC)

These filters have a lower potential for activity than other CMR samples.

TA-03-BLDG-29-ES-14	(Wing 2)
TA-03-BLDG-29-ES-15	(Wing 2)
TA-03-BLDG-29-ES-19	(Wing 3)
TA-03-BLDG-29-ES-20	(Wing 3)
TA-03-BLDG-29-ES-32	(Wing 7)
TA-03-BLDG-29-ES-33	(Wing 7)
TA-03-BLDG-29-ES-37	

The Non-CMR Gamma Clump (NONCMRGC)

These filters are from facilities outside of CMR, with low potential for gamma activity.

TA-03-BLDG-102-ES-22
TA-48-BLDG-01-ES-54
TA-50-BLDG-01-ES-02
TA-50-BLDG-37-ES-01
TA-50-BLDG-69-ES-03
TA-55-BLDG-04-ES-15
TA-55-BLDG-04-ES-16

Non-Clumped filters (individual analyses)

These filters have the highest potential for gamma activity

TA-48-BLDG-01-ES-07
TA-48-BLDG-01-ES-60

MAQ, Air Quality

Stack Sample Data Form and Chain-of-Custody Record

This form is from MAQ-109

Facility Name:

Analysis Requested: Gross Alpha, Gross Beta, Gamma Spectroscopy

Sample System Inspection

(Place a check (√) in box to indicate normal operation/conditions. Record sample flow in lpm/units)

Place Barcode Tracking Sticker Here

Sample Identification TA – Bldg – ES	Date Start	Time Start	Date Stop	Time Stop	Matrix	Container Type	Stack Fan	Sample Flow	Filter House	Sample Line	Stack Con'd	Timer reading	Remarks
					Filter	Glassine Envelope							
					Filter	Glassine Envelope							
					Filter	Glassine Envelope							
					Filter	Glassine Envelope							
					Filter	Glassine Envelope							
					Filter	Glassine Envelope							
					Filter	Glassine Envelope							
					Filter	Glassine Envelope							
					Filter	Glassine Envelope							
					Filter	Glassine Envelope							
					Filter	Glassine Envelope							
					Filter	Glassine Envelope							
					Filter	Glassine Envelope							

Sample Collector (print and sign) _____

Comments:

Relinquished by (print and sign)	Date / Time	Relinquished by (print and sign)	Date / Time	Relinquished by (print and sign)	Date / Time	Relinquished by (print and sign)	Date / Time
Received by (print and sign)		Received by (print and sign)		Received by (print and sign)		Received by (print and sign)	

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					Filter	Glassine Envelope							
					Filter	Glassine Envelope							

Sample Collector (print and sign) _____

Comments:

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Received by (print and sign)		**Received by (print and sign)**		**Received by (print and sign)**		**Received by (print and sign)**	